AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions and listing of claims in the above-referenced application:

Listing of the claims:

1. (Cancelled).
2. (Currently Amended) The microreactor of claim [[1]] 116, further comprising an ultrasonication means.
3. (Originally claimed) The microreactor of claim 2, wherein the ultrasonication means is an ultrasonication bath into which the microreactor or a portion thereof is emersed.
4. (Currently Amended) The microreactor of claim 2, wherein the ultrasonication ~~ultrasonification~~ means is an ultrasonication ~~ultrasonification~~ transducer that is attached to the microreactor.
5. (Currently Amended) The microreactor of claim [[1]] 116 wherein the width of said at least one inlet channel is in the range of between about 10 μm and about 5000 μm.
6. (Currently Amended) The microreactor of claim [[1]] 116 wherein the depth of said at least one inlet channel is in the range of between about 10 μm and about 2000 μm.
7. (Currently Amended) The microreactor of claim [[1]] 116 wherein said aging section comprises at least one aging channel.
8. (Originally claimed) The microreactor of claim 7 wherein the length of said at least one aging channel is in the range of between about 1 mm and about 100 cm.
9. (Originally claimed) The microreactor of claim 7 wherein the width of said at least one aging channel is in the range of between about 10 μm and about 5000 μm.
10. (Originally claimed) The microreactor of claim 7 wherein the depth of said at least one aging channel is in the range of between about 10 μm and about 2000 μm.
11. (Currently Amended) The microreactor of claim [[1]] 116 comprising a means for introducing ~~wherein~~ a first reactant stream ~~is introduced~~ into said microreactor at a first inlet channel.

12. (Currently Amended) The microreactor of claim 11 comprising a means for introducing ~~wherein~~ a second reactant stream ~~is introduced~~ into said microreactor at a second inlet channel.

13. (Currently Amended) The microreactor of claim 12 comprising a means for introducing ~~wherein~~ a third reactant stream ~~is introduced~~ into said microreactor at a third inlet channel.

14. (Currently Amended) The microreactor of claim [[1]] 116 wherein more than one reactant stream are introduced into said microreactor through one inlet channel.

15. (Currently Amended) The microreactor of claim ~~1 wherein said microreactor employs~~ 116 further comprising a means for employing solution-based sol-gel processing.

16. (Currently Amended) The microreactor of claim ~~15 wherein~~ 11 ~~a first reactant stream introduced into said microreactor~~ wherein said first reactant stream comprises alkoxide in alcohol.

17. (Currently Amended) The microreactor of claim ~~16 wherein~~ 12 ~~a second reactant stream introduced into said microreactor~~ wherein said second reactant stream comprises water in alcohol.

18. (Currently Amended) The microreactor of claim [[1]] 11 wherein said first reactant ~~streams have flow rates~~ stream has a flow rate in the range of between about 0.1 mL/min ~~0.1 μm/min.~~ and about 10 mL/min.

19. (Currently Amended) The microreactor of claim [[1]] 116 wherein said colloidal nanoparticles synthesized are Silica.

20. (Currently Amended) The microreactor of claim [[1]] 116 wherein the silica nanoparticles are prepared from a tetraethyl-orthosilicate precursor.

21. (Currently Amended) The microreactor of claim [[1]] 116 said colloidal nanoparticles synthesized are Titania.

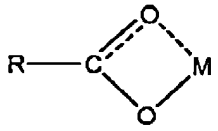
22. (Originally claimed) The microreactor of claim 21 wherein the titania nanoparticles are prepared from a titanium tetraethoxide precursor.

23. (Originally claimed) The microreactor of claim 21 wherein the titania nanoparticles are prepared from a titanium n-butoxide precursor.

24. (Currently Amended) The microreactor of claim [[1]] 116, wherein the colloidal nanoparticles synthesized are alumina.

25. (Currently Amended) The microreactor of claim [[1]] 116, wherein the colloidal nanoparticles synthesized are ceria.

26. (Currently Amended) The microreactor of claim [[1]] 116, wherein the colloidal nanoparticles are prepared from one or more compounds represented by the following structural formula:



wherein:

M is La, Sr, Mn, Fe, Co, Ce, Gd, Cu, or Ni; and

R is an alkyl, aryl or arylalkyl group.

27. (Currently Amended) The microreactor of claim [[1]] 116 wherein said colloidal nanoparticles have monodisperse size distributions.

28. (Currently Amended) The microreactor of claim [[1]] 116 wherein said colloidal nanoparticles have polydisperse size distributions.

29. (Currently Amended) The microreactor of claim [[1]] 116 wherein said colloidal nanoparticles have precisely defined polydisperse size distribution.

30. (Currently Amended) The microreactor of claim [[1]] 116 wherein said colloidal nanoparticles are charged.

31. (Currently Amended) The microreactor of claim [[1]] 116 wherein said micromixing block has one or more channels that have a width of between about 1 μm and about 200 μm.

32. (Currently Amended) The microreactor of claim [[1]] 116 wherein said micromixing block has one or more channels that have a depth of between about 10 μm and about 2000 μm.

33. (Currently Amended) The microreactor of claim [[1]] 116 further comprising a quench fluid inlet port downstream from said aging section and upstream from said at least one outlet channel.

34. (Currently Amended) The microreactor of claim [[33]] 119 wherein said quench fluid comprises [[is]] an inert solvent.

35. (Currently Amended) The microreactor of claim [[33]] 119 wherein said quench fluid comprises [[is]] alcohol.

36. (Currently Amended) The microreactor of claim [[33]] 119, comprising a means for introducing at least one reactant stream into said microreactor at said at least one inlet channel, and wherein said quench fluid inlet port is adapted to introduce said quench fluid ~~introduced~~ into said microreactor at a flow rate equal to or greater than the flow rate of said at least one reactant stream ~~said reacting fluids~~.

37. (Originally claimed) The microreactor of claim 33 wherein the introduction of said quench fluid into the microreactor stops the colloidal nanoparticle growth.

38.-115. (Cancelled).

116. (New) A microreactor system, comprising:

at least one colloidal nanoparticle;

at least one inlet channel;

at least one micromixing block positioned downstream from said at least one inlet channel;

an ageing section positioned downstream from said at least one micromixing block; and

at least one outlet channel positioned downstream from said aging section that outputs the at least one colloidal nanoparticle, wherein said colloidal nanoparticle, inlet channel, micromixing block, aging section and outlet channel reside on one integrated substrate.

117. (New) The microreactor of claim 12 wherein said second reactant stream has a flow rate in the range of between about 0.1 mL/min. and about 10 mL/min.

118. (New) The microreactor of claim 13 wherein said third reactant stream has a flow rate in the range of between about 0.1 mL/min. and about 10 mL/min.

119. (New) The microreactor of claim 33, comprising a means for introducing a quench fluid into said quench fluid inlet port.